

THE EFFECT OF VIDEO-BASED EDUCATION ON CARDIAC AND PULMONARY RESUSCITATION ANIMATION ON THE SELF-EFFICACY OF FIRST AID IN CARDIAC ARREST At SMK 4 Pancasila Ambulu Jember

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ABSTRACT

Cardiac arrest is a life-threatening emergency that requires immediate and appropriate treatment. Low self-efficacy among students in providing first aid for cardiac arrest can become a barrier to early intervention. Animated video media can be used as an educational method because it presents information visually, attractively, and in a way that is easy to understand. This study aimed to analyze the effect of animated cardiopulmonary resuscitation (CPR) video education on students' self-efficacy in providing first aid for cardiac arrest at SMK 4 Pancasila Ambulu Jember. The study employed a pre-experimental one-group pretest-posttest design. The population and sample consisted of 62 grade XI students selected using total sampling. Data were collected using a self-efficacy questionnaire with a Likert scale of 1 –5. Pretest results showed that 23 respondents (37.1%) had high self-efficacy, while posttest results increased to 59 respondents (95.2%). Wilcoxon signed-rank test analysis yielded $p=0.000$ ($p<0.05$), mean rank=31.50, and $Z=-6.849$, indicating that animated video education significantly improved students' self-efficacy in providing first aid for cardiac arrest.

Keywords: *Cardiac Arrest, Cardiopulmonary Resuscitation, Self-efficacy, Animated Video*

INTRODUCTION

Cardiac arrest is one of the emergency conditions that requires quick treatment because it can cause death in a short time. Cardiopulmonary resuscitation (CPR) is a rescue measure that can be carried out before health workers arrive at the scene (Syafriati, 2023). However, many people are still hesitant to provide help because they lack confidence in their abilities. Low self-efficacy can hinder a person from taking action when facing emergencies (Hamid, 2024).

Cardiac arrest cases are still a global health problem. The World Health Organization reports that deaths from cardiovascular disease reached 17.9 million people in 2019 and continue to increase every year (Evaluation, 2023). In Indonesia, the death rate due to cardiac arrest also shows an increase and is one of the causes of death that is widely found in health facilities (Kemenkes, 2025).

Self-efficacy is one of the important factors that affect a person's readiness to provide first aid in emergency conditions (Nadila Afifah et, 2025). According to Bandura, individuals with high self-efficacy tend to have greater confidence to take action, survive obstacles, and complete tasks that are considered challenging. Conversely, individuals with low self-efficacy are more likely to feel doubtful and avoid actions that are considered risky (Bandura, 1997). In the context of cardiac arrest, high self-confidence is needed because delays in providing RJP can reduce the chances of safety of victims. Therefore, an educational method is needed that can increase understanding while building students' self-confidence in performing first aid (Wina Maulidya, 2022).

Animated video is one of the widely used learning media because it is able to combine visual, audio, and motion elements at the same time. This media can increase students' attention, interest in learning, and understanding of the material presented (Rasmawati, 2023). In adolescents, the use of animated videos is considered more interesting than conventional lecture methods because the delivery of information becomes more interactive and easy to understand (Ahsan et al., 2022).

Several studies show that education using video media can increase knowledge and self-efficacy in performing RJP. Lestari research (2023) found that video education increases students' self-efficacy in performing first aid in cardiac arrest cases. In addition, RJP training has been proven to be able to increase the confidence of adolescents and adults in providing assistance to cardiac arrest victims (Iriene Kusuma et al., 2023). However, research on the effect of animated videos on the self-efficacy of first aid in vocational school students is still limited.

Based on a preliminary study at SMK 4 Pancasila Ambulu Jember, most students have low self-efficacy and have never received education about RJP. Therefore, this study aims to analyze the influence of animation video-based education on Cardiac Resuscitation on the self-efficacy of first aid in cardiac arrest cases. This research is expected to be an effective alternative educational media in increasing students' readiness and confidence to provide first aid in cardiac arrest conditions (Dudella Desnani et al., 2022).

METHOD

This study uses a quantitative design with a pre-experimental type of research through a one group pretest-posttest design approach (Andriani, 2020). The study was conducted to analyze the effect of Cardiopulmonary Resuscitation (CPR) animation video-based education on the self-efficacy of first aid in cardiac arrest cases. The population in this study is all students of grade XI of SMK 4 Pancasila Ambulu Jember which totals 62 students. The sampling technique uses total sampling, so that the entire population is used as a research sample.

Data collection was carried out using a self-efficacy questionnaire consisting of 10 statements on a Likert scale of 1–5, which is very uncertain to very confident. Respondents first filled out a pretest questionnaire to measure the initial level of self-efficacy. Furthermore, respondents were given an intervention in the form of education using a 5-minute Cardiopulmonary Resuscitation (CPR) animation video which was played three times. After the intervention was completed, respondents again filled out the same questionnaire as a posttest to measure changes in self-efficacy.

Data analysis was carried out using univariate and bivariate analysis. Univariate analysis was used to describe respondent characteristics as well as self-efficacy levels before and after the intervention. Bivariate analysis was performed using the Wilcoxon Signed Rank Test because the data were not normally distributed. Decision-making is based on a significance level of $\alpha = 0.05$. A p value of < 0.05 showed that education based on Cardiac Resuscitation animation videos had a significant effect on the self-efficacy of first aid in cardiac arrest cases.

FINDING AND DISCUSSION

RESEARCH RESULT

GENERAL DATA

Table 1 Frequency Distribution of Respondents By gender, age, class, and experience

No.	Characteristics	Frequency (f)	Percentage (%)
1.	Gander		
	Male	4	6,5 %
	Women	58	93,5 %
	Total	62	100
2.	Age		
	<17 Years	7	11,3 %
	17 Years	41	66,1 %
	>17 Years	14	22,6 %
	Total	62	100 %
3.	Helped cardiac arrest victims		
		0	0 %
	Ever	62	100 %
		62	100
4.	Never before		
		35	56,5 %
	Total	27	43,5 %
		62	100
5.	Have you ever received education about RJP?		
	Never been educated		0 %
	Scholl	0	0 %
	Extracurricular	4	11,4 %
	Television	0	0 %
	Youtube	6	9,7 %
	Social media (Instagram/tiktok)	7	11,3 %
	Others	0	0 %
	More than one answer	22	24,1 %
	Total	35	56,5 %

The results of table 1 show that almost all of them are female, namely 58 (93.5%). Most of the respondents were 17 years old, namely 41 (66.1%). All respondents had never helped cardiac arrest patients (100%). Most of the respondents had received RJP education as many as 35 (56.5%). Almost half of the respondents received education from youtube, social media (Instagram/tiktok) as many as 22 (35.5%)

DATA KHUSUS

1. Self-efficacy Before Being Provided With Heart-Lung Resuscitation Animation Video Education

Table 1 Frequency Distribution Before Being Given Video-Based Education on Cardiac Resuscitation Animation on Self-Efficacy of First Aid in Cardiac Arrest at SMK 4 Pancasila Ambulu Jember

Self-efficacy	Frequency (f)	Presentation (%)
Low	22	35,5 %
Medium	17	27,4 %
Height	23	37,1 %
Total	62	100 %

The results of table 4.2 show that before being given video-based education on cardiopulmonary resuscitation animation, almost half of the respondents were in the low category as many as 22 people (35.5%), almost half of the respondents were in the medium category as many as 17 people (27.4%), and almost half of the respondents were in the high category as many as 23 people (37.1%).

2. Self-efficacy After Being Provided with Heart-Lung Resuscitation Animation Video Education

Table 4. 1 Frequency Distribution After Being Given Heart-Lung Resuscitation Animation Video-Based Education on Self-Efficacy of First Aid in Cardiac Arrest at SMK 4 Pancasila Ambulu Jember

Self-efficacy	Frequency (f)	Presentation (%)
Low	0	0 %
Medium	3	4,8 %
Height	59	95,2 %
Total	62	100 %

Hasil dari tabel 2 menunjukkan sesudah diberikan edukasi berbasis video animasi resusitasi jantung paru hampir seluruhnya responden berada pada kategori tinggi sebanyak 59 orang (95,2%) dan Sebagian kecil berada kategori sedang sebanyak 3 orang (4,8%).

3. The Effect of Animation Animation Education on Cardiac Resuscitation Self-Efficacy in Cardiac Arrest at SMK 4 Pancasila Ambulu Jember

Table 3 Wilcoxon Signed-Rank Test Results

Variabel	<i>P-value</i>	<i>Mean-Rank</i>	<i>Z-Score</i>
<i>Pretest-posttest</i>	0,000	31.50	-6,849

The results of table 3 show that statistical tests before and after being given video-based education on cardiopulmonary resuscitation animation on the self-efficacy of first aid in cardiac arrest have changed. Based on the results of the Wilcoxon test, it showed a p-value of 0.000 ($p < 0.05$) with a mean rank of 31.50, and a Z-score of -6.849.

DISCUSSION

1. Self-efficacy Before Being Provided With Heart-Lung Resuscitation Animation Video Education

The results showed that before being given video-based education on Cardiopulmonary Resuscitation (RJP), almost half of the respondents were in the high self-efficacy category as many as 23 respondents (37.1%), while the rest were in the medium and low categories. These results show that most students do not have optimal self-confidence in providing first aid in cardiac arrest cases. Low self-efficacy can cause a person to feel hesitant to act despite knowing that the victim needs immediate help.

Self-efficacy is an individual's belief in his or her ability to carry out an action to achieve the expected result. Based on table 4.1, almost all respondents were female, namely 58 people (93.5%). According to (Bandura, 1997), Self-efficacy is influenced by the experience of success, vicarious experience, verbal persuasion, and the emotional state of the individual (Ahsan et al., 2022). Although Bandura does not state that women have higher self-efficacy than men, some studies show that women tend to have better self-efficacy in the health field because they are more active in receiving information, more thorough in the learning process, and have better social support (Bimantoro et al., 2023).

All respondents had never helped cardiac arrest patients (100%). According to (Wahyuni, 2018), Self-efficacy can be formed through the process of learning and experiences gained from the environment. The researcher's assumption is that self-efficacy is already high in some students before education may be influenced by the exposure of information about RJP from television, YouTube, TikTok, and Instagram as many as 35 respondents (56.5%), as well as the experience of gaining knowledge through extracurricular activities in 4 respondents. In addition, high confidence can also make students feel able to provide help even though they do not have adequate understanding.

2. Self-efficacy After Being Provided with Heart-Lung Resuscitation Animation Video Education

The results showed that after being given education based on RJP animation videos, almost all respondents were in the category of high self-efficacy, namely 59 respondents (95.2%). This improvement shows that animated videos are able to help students understand the material provided and increase their self-confidence in performing first aid in cardiac arrest cases.

High self-efficacy can reduce anxiety, fear, and doubt when performing an action, so that individuals are more confident in their abilities. According to (Bandura, 1997), Self-efficacy is influenced by personal experience, knowledge, information obtained, and observation of the experiences of others. The experience of success can increase self-confidence, while failure can lower it (Hidayat et al., 2022). In addition, providing clear information can strengthen the aspect of strength in self-efficacy, namely the level of individual confidence in performing an action (Bandura, 1997).

Self-efficacy is influenced by a variety of factors, including age and education. The average respondent is 17 years old, an age that allows individuals to gain experiences and learning that can increase confidence in their abilities (Wahyuni, 2018). In addition, the delivery of clear and easy-to-understand information through RJP animated videos helps students understand the first aid steps, thereby increasing self-efficacy and reducing fear

and anxiety due to lack of knowledge (Hella Meldy et al., 2021). High self-efficacy can increase students' confidence in dealing with emergency situations and performing RJP better (Lestari, 2023). However, after the intervention, there were still a small number of respondents with moderate self-efficacy as many as 3 people (4.8%).

3. The Effect of Video-Based Education Based on Cardiac Resuscitation Animation on the Self-efficacy of First Aid in Cardiac Arrest at SMK 4 Pancasila Ambulu Jember

The results of the Wilcoxon Signed Rank Test showed a p-value of 0.000 ($p < 0.05$), so it can be concluded that education based on animated videos of Cardiac and Pulmonary Resuscitation has an effect on the self-efficacy of first aid in cardiac arrest cases. These results show that providing education through animated videos is able to increase students' confidence in their ability to perform RJP actions.

This research is in line with research (Lestari, 2023) which shows the influence of video-based education on the self-efficacy of high school students. Cardiac arrest is a condition in which the heart suddenly stops functioning so that the flow of blood, oxygen, and nutrients to vital organs is stopped (Nadila Afifah et, 2025). If not treated immediately, this condition can lead to death. One of the initial treatment efforts in out-of-hospital cardiac arrest (OHCA) cases is cardiopulmonary resuscitation (RJP), which is an action to restore respiratory function and blood circulation in cardiac arrest victims or respiratory arrest victims (Harinal Afri Resta et al., 2023). Rapid administration of RJP has been proven to increase the chances of survival of victims of sudden cardiac arrest (AHA, 2025).

Self-efficacy is a person's belief in his ability to perform an action to achieve the desired goal. Self-efficacy is not only related to the ability possessed, but also the individual's confidence in using those abilities (Wina Maulidya, 2022). According to (Bandura, 1997), Self-efficacy is influenced by the experience of success and failure, both experienced by yourself and through observation of others. Success, good physical condition, and a positive mindset can increase self-confidence so that it forms high self-efficacy.

One of the media that can be used for RJP education is animated videos. This media is able to convey information in an interesting, interactive, and easy-to-understand manner so that it can increase students' understanding of the material provided (Hella Meldy et al., 2021). In adolescents, animated videos help the independent learning process, increase interest in learning, and facilitate the understanding of information (Rasmawati, 2023). In addition, animated videos can be accessed at any time and present information consistently. Health education through animated videos also helps individuals more easily understand, remember, and apply the information obtained (Lestari, 2023). In this study, education was given three times so that the material presented could be better understood by the respondents.

The limitation of this study is the dependence on the internet network during the implementation of the research so that connection disruption (Wifi) can affect the smooth running of research activities. In addition, the age item on the questionnaire is presented in the form of multiple choices, not direct fills, so that the age information obtained by the respondents becomes less specific. It is suggested that researchers can further develop more diverse educational media and methods, such as combining animated videos with hands-on simulations, so that the learning process becomes more effective. In addition,

more and more diverse direct engagement of respondents needs to be considered to obtain a broader and more accurate picture of the results.

CONCLUSION

The results of the research that had been conducted before being given video-based education on cardiac resuscitation animation, most of the respondents were in the high category of 23 people (37.1%). Furthermore, based on the results of the study, after being given video-based education on cardiac resuscitation animation, most of the respondents were in the high category of 59 people (95.2%). The Wilcoxon signed-rank test statistical test in looking at the comparison of pretest and posttest obtained a p-value of 0.000 with $\alpha = <0.05$. Thus, it can be concluded that there is an effect of video-based education on cardiac resuscitation animation on the self-efficacy of first aid in cardiac arrest at SMK 4 Pancasila Ambulu Jember.

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